General

Guideline Title

Ankle stability and movement coordination impairments: ankle ligament sprains: clinical practice guidelines linked to the International Classification of Functioning, Disability and Health from the Orthopaedic Section of the American Physical Therapy Association.

Bibliographic Source(s)

Martin RL, Davenport TE, Paulseth S, Wukich DK, Godges JJ, Orthopaedic Section American Physical Therapy Association. Ankle stability and movement coordination impairments: ankle ligament sprains. J Orthop Sports Phys Ther. 2013 Sep;43(9):A1-40. PubMed

Guideline Status

This is the current release of the guideline.

Recommendations

Major Recommendations

Levels of evidence (I–V) and grades of recommendation (A–F) are defined at the end of the "Major Recommendations" field.

Risk Factors

Acute Lateral Ankle Sprain

Clinicians should recognize the increased risk of acute lateral ankle sprain in individuals who (1) have a history of a previous ankle sprain, (2) do not use an external support, (3) do not properly warm up with static stretching and dynamic movement before activity, (4) do not have normal ankle dorsiflexion range of motion, and (5) do not participate in a balance/proprioceptive prevention program when there is a history of a previous injury. (Grade of Recommendation B)

Ankle Instability

Clinicians should recognize the increased risk for developing ankle instability in patients who (1) have an increased talar curvature, (2) are not using an external support, or (3) did not perform balance or proprioception exercises following an acute lateral ankle sprain. (Grade of Recommendation C)

Diagnosis/Classification

Acute Lateral Ankle Sprain

Clinicians should use the clinical findings of level of function, ligamentous laxity, hemorrhaging, point tenderness, total ankle motion, swelling, and

pain to classify a patient with acute ankle ligament sprain into the International Statistical Classification of Diseases and Related Health Problems (ICD) category of sprain and strain of ankle (S93.4), and the associated International Classification of Functioning, Disability and Health (ICF) impairment-based category of ankle stability (b7150 stability of a single joint) and movement coordination impairments (b7601 control of complex voluntary movements). (Grade of Recommendation B)

Ankle Instability

Clinicians may incorporate a discriminative instrument, such as the Cumberland Ankle Instability Tool, to assist in identifying the presence and severity of ankle instability associated with the ICD category of instability secondary to old ligament injury, ankle and foot (M24.27), and the associated ICF impairment-based category of ankle stability (b7150 stability of a single joint) and movement coordination impairments (b7601 control of complex voluntary movements). (Grade of Recommendation B)

Differential Diagnosis

Acute Lateral Ankle Sprain

Clinicians should use diagnostic classifications other than an acute lateral ankle sprain when the patient's reported activity limitations or impairments of body function and structure are not consistent with those presented in the Diagnosis/Classification section of this guideline. Particularly, the Ottawa and Bernese ankle rules should be used to determine whether a radiograph is required to rule out a fracture of the ankle and/or foot. (Grade of Recommendation A)

Ankle Instability

Clinicians should use diagnostic classifications other than ankle instability when the patient's reported activity limitations or impairments of body function and structure are not consistent with those presented in the Diagnosis/Classification section of this guideline. (Grade of Recommendation F)

Examination

Outcome Measures

Clinicians should incorporate validated functional outcome measures, such as the Foot and Ankle Ability Measure (FAAM) and the Lower Extremity Functional Scale (LEFS), as part of a standard clinical examination. These should be utilized before and after interventions intended to alleviate the impairments of body function and structure, activity limitations, and participation restrictions associated with ankle sprain and instability. (Grade of Recommendation A)

Activity Limitation and Participation Restriction Measures

When evaluating a patient in the postacute period following a recent or recurring lateral ankle sprain, assessment of activity limitation, participation restriction, and symptom reproduction should include objective and reproducible measures, such as single-limb hop tests that assess performance with lateral movements, diagonal movements, and directional changes. (Grade of Recommendation B)

Physical Impairment Measures

When evaluating a patient with an acute or subacute lateral ankle sprain over an episode of care, assessment of impairment of body function should include objective and reproducible measures of ankle swelling, ankle range of motion, talar translation and inversion, and single-leg balance. (Grade of Recommendation A)

Interventions—Acute/Protected Motion Phase

Early Weight Bearing With Support

Clinicians should advise patients with acute lateral ankle sprains to use external supports and to progressively bear weight on the affected limb. The type of external support and gait assistive device recommended should be based on the severity of the injury, phase of tissue healing, level of protection indicated, extent of pain, and patient preference. In more severe injuries, immobilization ranging from semi-rigid bracing to below-knee casting may be indicated. (Grade of Recommendation A)

Manual Therapy

Clinicians should use manual therapy procedures, such as lymphatic drainage, active and passive soft tissue and joint mobilization, and anterior-to-posterior talar mobilization procedures, within pain-free movement, to reduce swelling, improve pain-free ankle and foot mobility and normalize

gait parameters in individuals with an acute lateral ankle sprain. (Grade of Recommendation B)

Physical Agents

Cryotherapy

Clinicians should use repeated intermittent applications of ice to reduce pain, decrease the need for pain medication, and improve weight bearing following an acute ankle sprain. (Grade of Recommendation A)

Diathermy

Clinicians can utilize pulsating shortwave diathermy for reducing edema and gait deviations associated with acute ankle sprains. (Grade of Recommendation C)

Electrotherapy

There is moderate evidence both for and against the use of electrotherapy for the management of acute ankle sprains. (Grade of Recommendation D)

Low-level laser therapy

There is moderate evidence both for and against the use of low-level laser therapy for the management of acute ankle sprains. (Grade of Recommendation D)

Ultrasound

Clinicians should not use ultrasound for the management of acute ankle sprains. (Grade of Recommendation A)

Therapeutic Exercises

Clinicians should implement rehabilitation programs that include therapeutic exercises for patients with severe lateral ankle sprains. (Grade of Recommendation A)

Interventions—Progressive Loading/Sensorimotor Training Phase

Manual Therapy

Clinicians should include manual therapy procedures, such as graded joint mobilizations, manipulations, and non–weight-bearing and weight-bearing mobilization with movement, to improve ankle dorsiflexion, proprioception, and weight-bearing tolerance in patients recovering from a lateral ankle sprain. (Grade of Recommendation A)

Therapeutic Exercise and Activities

Clinicians may include therapeutic exercises and activities, such as weight-bearing functional exercises and single-limb balance activities using unstable surfaces, to improve mobility, strength, coordination, and postural control in the postacute period of rehabilitation for ankle sprains. (Grade of Recommendation C)

Sport-Related Activity Training

Clinicians can implement balance and sport-related activity training to reduce the risk for recurring ankle sprains in athletes. (Grade of Recommendation C)

Definitions:

Levels of Evidence

Individual clinical research articles were graded according to criteria described by the Centre for Evidence-Based Medicine, Oxford, United Kingdom.

I	Evidence obtained from high-quality diagnostic studies, prospective studies, or randomized controlled trials
II	Evidence obtained from lesser-quality diagnostic studies, prospective studies, or randomized controlled trials (e.g., weaker diagnostic criteria and reference standards, improper randomization, no blinding, less than 80% follow-up)

III	Case-controlled studies or retrospective studies
IV	Case series
V	Expert opinion

Grades of Recommendation

The overall strength of the evidence supporting recommendations made in these guidelines was graded according to guidelines described by Guyatt et al. as modified by MacDermid et al. and adopted by the coordinator and reviewers of this project. In this modified system, the typical A, B, C, and D grades of evidence have been modified to include the role of consensus expert opinion and basic science research to demonstrate biological or biomechanical plausibility.

Grades of Recommendation		Strength of Evidence
A	Strong evidence	A preponderance of level I and/or level II studies support the recommendation. This must include at least 1 level I study
B	Moderate evidence	A single high-quality randomized controlled trial or a preponderance of level II studies support the recommendation
C	Weak evidence	A single level II study or a preponderance of level III and IV studies including statements of consensus by content experts support the recommendation
D	Conflicting evidence	Higher-quality studies conducted on this topic disagree with respect to their conclusions. The recommendation is based on these conflicting studies
E	Theoretical/foundational evidence	A preponderance of evidence from animal or cadaver studies, from conceptual models/principles or from basic sciences/bench research support this conclusion
F	Expert opinion	Best practice based on the clinical experience of the guidelines development team

Clinical Algorithm(s)

None provided

Scope

Disease/Condition(s)

Acute lateral ligament ankle sprains and ankle instability

Guideline Category

Diagnosis

Evaluation

Management

Rehabilitation

Risk Assessment

Treatment

Clinical Specialty

Family Practice

Orthopedic Surgery

Physical Medicine and Rehabilitation

Podiatry

Sports Medicine

Intended Users

Physical Therapists

Physicians

Podiatrists

Students

Utilization Management

Guideline Objective(s)

- To describe evidence-based physical therapy practice, including diagnosis, prognosis, intervention, and assessment of outcome, for musculoskeletal disorders commonly managed by orthopaedic physical therapists
- To classify and define common musculoskeletal conditions using the World Health Organization's terminology related to impairments of body function and body structure, activity limitations, and participation restrictions
- To identify interventions supported by current best evidence to address impairments of body function and structure, activity limitations, and participation restrictions associated with common musculoskeletal conditions
- To identify appropriate outcome measures to assess changes resulting from physical therapy interventions in body function and structure as well as in activity and participation of the individual
- To provide a description to policy makers, using internationally accepted terminology, of the practice of orthopaedic physical therapists
- To provide information for payers and claims reviewers regarding the practice of orthopaedic physical therapy for common musculoskeletal conditions
- To create a reference publication for orthopaedic physical therapy clinicians, academic instructors, clinical instructors, students, interns, residents, and fellows regarding the best current practice of orthopaedic physical therapy

Target Population

Patients with acute lateral ligament ankle sprains and ankle instability

Interventions and Practices Considered

Evaluation/Diagnosis

1. Patient history and physical examination
2. Identification of risk factors
3. Classification of ankle injury and ankle stability:
    - International Statistical Classification of Diseases and Related Health Problems (ICD)
    - International Classification of Functioning, Disability and Health (ICF)
    - Cumberland Ankle Instability Tool
4. Differential diagnosis

5. Assessment of activity limitation, participation restriction and physical impairment (including objective and reproducible measures)

Treatment/Management

1. Early weight bearing with support
2. Manual therapy (e.g., lymphatic drainage, joint mobilization, manipulations)
3. Physical agents:
    - Cryotherapy
    - Diathermy
    - Electrotherapy
    - Low-level laser therapy
    - Ultrasound
4. Therapeutic exercises and activities
5. Sport-related activity training

Major Outcomes Considered

- Risk of ankle ligament sprains
- Accuracy, sensitivity, specificity, and reliability of diagnostic tests
- Effectiveness of interventions in terms of pain relief, level of function, and symptom reproduction
- Recurrence rate

Methodology

Methods Used to Collect/Select the Evidence

Hand-searches of Published Literature (Primary Sources)

Hand-searches of Published Literature (Secondary Sources)

Searches of Electronic Databases

Description of Methods Used to Collect/Select the Evidence

It was acknowledged by the Orthopaedic Section, American Physical Therapy Association (APTA) content experts that only performing a systematic search and review of the evidence related to diagnostic categories based on International Statistical Classification of Diseases and Related Health Problems (ICD) terminology would not be sufficient for these International Classification of Functioning, Disability, and Health (ICF)-based clinical practice guidelines, as most of the evidence associated with changes in levels of impairment or function in homogeneous populations is not readily searchable using the ICD terminology.

Thus, the authors of this guideline independently performed a systematic search of MEDLINE, the Cumulative Index to Nursing and Allied Health Literature (CINAHL), and the Cochrane Database of Systematic Reviews (1967 through April 2012) for any relevant articles related to classification, examination, and intervention strategies for ankle sprains. Additionally, when relevant articles were identified, their reference lists were hand searched in an attempt to identify other relevant articles.

Number of Source Documents

Not stated

Methods Used to Assess the Quality and Strength of the Evidence

Weighting According to a Rating Scheme (Scheme Given)

Rating Scheme for the Strength of the Evidence

Levels of Evidence

Individual clinical research articles were graded according to criteria described by the Centre for Evidence-Based Medicine, Oxford, United Kingdom.

I	Evidence obtained from high-quality diagnostic studies, prospective studies, or randomized controlled trials
II	Evidence obtained from lesser-quality diagnostic studies, prospective studies, or randomized controlled trials (e.g., weaker diagnostic criteria and reference standards, improper randomization, no blinding, less than 80% follow-up)
III	Case-controlled studies or retrospective studies
IV	Case series
V	Expert opinion

Methods Used to Analyze the Evidence

Review of Published Meta-Analyses

Systematic Review

Description of the Methods Used to Analyze the Evidence

Articles from the searches were compiled and reviewed for accuracy by the authors. Individual clinical research articles were graded according to criteria described by the Centre for Evidence-Based Medicine, Oxford, UK (http://www.cebm.net) for diagnostic, prospective, and therapeutic studies. If the 2 content experts did not agree on a grade of evidence for a particular article, a third content expert was used to resolve the issue.

Methods Used to Formulate the Recommendations

Expert Consensus

Description of Methods Used to Formulate the Recommendations

Content experts were appointed by the Orthopaedic Section of the American Physical Therapy Association (APTA) as developers and authors of clinical practice guidelines for musculoskeletal conditions of the ankle and foot that are commonly treated by physical therapists. These content experts were given the task to identify impairments of body function and structure, activity limitations, and participation restrictions, described using International Classification of Functioning (ICF) terminology, that could (1) categorize patients into mutually exclusive impairment patterns on which to base intervention strategies, and (2) serve as measures of changes in function over the course of an episode of care. The second task given to the content experts was to describe the supporting evidence for the identified impairment-pattern classification as well as interventions for patients with activity limitations and impairments of body function and structure consistent with the identified impairment-pattern classification.

Rating Scheme for the Strength of the Recommendations

Grades of Recommendation

The overall strength of the evidence supporting recommendations made in these guidelines was graded according to guidelines described by Guyatt et al. as modified by MacDermid et al. and adopted by the coordinator and reviewers of this project. In this modified system, the typical A, B, C, and D grades of evidence have been modified to include the role of consensus expert opinion and basic science research to demonstrate biological or biomechanical plausibility.

Grades of Recommendation		Strength of Evidence
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E	Theoretical/foundational evidence	A preponderance of evidence from animal or cadaver studies, from conceptual models/principles or from basic sciences/bench research support this conclusion
F	Expert opinion	Best practice based on the clinical experience of the guidelines development team

Cost Analysis

The guideline authors reviewed published cost analyses.

Method of Guideline Validation

External Peer Review

Internal Peer Review

Description of Method of Guideline Validation

The Orthopaedic Section, American Physical Therapy Association (APTA) selected consultants from the following areas to serve as reviewers of the early drafts of these clinical practice guidelines:

- Basic science in ligament pathology and healing
- Claims review
- Coding
- Rheumatology
- Foot and Ankle Special Interest Group of the Orthopaedic Section, APTA
- Medical practice guidelines
- Orthopaedic physical therapy residency education
- Orthopaedic physical therapy clinical practice
- Orthopaedic surgery
- Physical therapy academic education
- Sports physical therapy residency education
- Sports rehabilitation

Comments from these reviewers were utilized by the authors to edit these clinical practice guidelines prior to submitting them for publication to the *Journal of Orthopaedic & Sports Physical Therapy*.

Evidence Supporting the Recommendations

Type of Evidence Supporting the Recommendations

The type of supporting evidence is identified and graded for each recommendation (see the "Major Recommendations" field).

Benefits/Harms of Implementing the Guideline Recommendations

Potential Benefits

Appropriate diagnosis and orthopaedic management of patients with ankle ligament sprains, including acute lateral sprains and ankle instability

Potential Harms

Not stated

Qualifying Statements

Qualifying Statements

These guidelines are not intended to be construed as or to serve as a standard of medical care. Standards of care are determined on the basis of all clinical data available for an individual patient and are subject to change as scientific knowledge and technology advance and patterns of care evolve. These parameters of practice should be considered guidelines only. Adherence to them will not ensure a successful outcome in every patient, nor should they be construed as including all proper methods of care or excluding other acceptable methods of care aimed at the same results. The ultimate judgment regarding a particular clinical procedure or treatment plan must be made in light of the clinical data presented by the patient; the diagnostic and treatment options available; and the patient's values, expectations, and preferences. However, it is suggested that significant departures from accepted guidelines should be documented in the patient's medical records at the time the relevant clinical decision is made.

Implementation of the Guideline

Description of Implementation Strategy

An implementation strategy was not provided.

Implementation Tools

Patient Resources

For information about availability, see the *Availability of Companion Documents* and *Patient Resources* fields below.

Institute of Medicine (IOM) National Healthcare Quality Report Categories

IOM Care Need

Getting Better

IOM Domain

Effectiveness

Patient-centeredness

Identifying Information and Availability

Bibliographic Source(s)

Martin RL, Davenport TE, Paulseth S, Wukich DK, Godges JJ, Orthopaedic Section American Physical Therapy Association. Ankle stability and movement coordination impairments: ankle ligament sprains. J Orthop Sports Phys Ther. 2013 Sep;43(9):A1-40. PubMed

Adaptation

Not applicable: The guideline was not adapted from another source.

Date Released

2013 Sep

Guideline Developer(s)

The Orthopaedic Section of the American Physical Therapy Association, Inc. - Medical Specialty Society

Source(s) of Funding

The Orthopaedic Section of the American Physical Therapy Association (APTA)

Guideline Committee

Not stated

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Financial Disclosures/Conflicts of Interest

Not stated

Guideline Status

This is the current release of the guideline.

Guideline Availability

Electronic copies: Available from the Journal of Orthopedic and Sports Physical Therapy Web site .

Print copies: Available from the Orthopaedic Section APTA, Inc., 2920 East Avenue South, Suite 200, La Crosse, WI 54601. E-mail: icf@orthopt.org.

Availability of Companion Documents

None available

Patient Resources

The following is available:

- Ankle sprains: combination of manual therapy and supervised exercise leads to better recovery. JOSPT perspectives for patients. J Orthop Sports Phys Ther 2013 Jul;43(7):456. Electronic copies: Available from the Journal of Orthopaedic and Sports Physical Therapy Web site .

Please note: This patient information is intended to provide health professionals with information to share with their patients to help them better understand their health and their diagnosed disorders. By providing access to this patient information, it is not the intention of NGC to provide specific medical advice for particular patients. Rather we urge patients and their representatives to review this material and then to consult with a licensed health professional for evaluation of treatment options suitable for them as well as for diagnosis and answers to their personal medical questions. This patient information has been derived and prepared from a guideline for health care professionals included on NGC by the authors or publishers of that original guideline. The patient information is not reviewed by NGC to establish whether or not it accurately reflects the original guideline's content.

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